What is Claimed is:

1. A sensor for temperature and gas detection comprising a sol gel nanodisk fabricated between conducting electrodes.
2. The sensor of Claim 1, wherein the sol gel nanodisk comprises a semi-crystallized structure having surface oxygen ions.
3. The sensor of Claim 2, wherein the semi-crystallized structure comprises an inorganic molecule selected from the group consisting of SnO_2,Ti-SnO_2, Co-SnO_2, Ni-SnO_2, Cu-SnO_2, Zn-SnO_2, Cd-SnO_2, Pt-SnO_2, TiO_2, ZrO_2, ZnO, MgO, CaO, Li_2O, B_2O_3, CO, CO_2, SiO_2, GeO_2, N_2O, NO, N_2O_3, NO_2, N_2O5, SO_2, SO_3, SeO_2, SeO_3, TeO_2, TeO_3, Cl_2O, ClO_2, Cl_2O_7, Br_2O, BrO_2, I_2O_5 and I_2O_7.
4. The sensor of Claim 1, wherein the conducting electrodes are comprised of a metal.
5. The sensor of Claim 1, wherein the sensor is fabricated on an insulating substrate.
6. The sensor of Claim 1, wherein the sol gel nanodisk has a width of about 4μM and a length of about 5μM.
7. The sensor of Claim 1, wherein the sol gel nanodisk comprises an ionic surfactant.
8. The sensor of Claim 1, wherein the sol gel nanodisk comprises a nonionic surfactant.
9. The sensor of Claim 1, wherein the sol gel nanodisk comprises poly(ethyleneoxide)-b-poly(propyleneoxide)-b-poly(ethyleneoxide) copolymer.
10. A chemical sensor comprising at least two sol gel nanodisks fabricated between conducting electrodes on a single substrate.

11. A method of fabricating a nanodisk sensor comprising,

    a. contacting a reservoir of a sol gel with a tip; and,

    b. contacting the tip between electrodes on a surface to deposit a sol gel nanodisk in ohmic contact with the electrodes.

12. The method of Claim 11, comprising the additional step of contacting a second surface with the tip after contacting the reservoir of a sol gel and before contacting the surface between the electrodes.

13. The method of Claim 11, wherein the semiconductor sol comprises a compound selected from the group consisting of surfactant, solvent, metal and combinations thereof.

14. The method of Claim 11, wherein the semiconductor sol comprises copolymer poly(ethyleneoxide)-b-poly(propyleneoxide)-b-poly(ethyleneoxide), ethanol and tin chloride.

15. The method of Claim 14, wherein the semiconductor sol additionally comprises the ethanol-solvable salt of a metal selected from the group consisting of titanium, cobalt, nickel, copper, zinc, cadmium and platinum.

16. The method of Claim 11, wherein the tip is a microcantilever.

17. The method of Claim 11, comprising the additional step of fabricating the electrodes by photolithography and electron bean deposition on a surface prior to contacting the tip.

18. A sensor for temperature and gas detection fabricated by a method comprising,

a. contacting a reservoir of a sol gel with a tip; and,

b. contacting the tip between electrodes on a surface to deposit a sol gel nanodisk in ohmic contact with the electrodes.

19. The sensor of Claim 18, wherein the sol gel comprises a tin dioxide selected from the group consisting of SnO_2,Ti-SnO_2, Co-SnO_2, Ni-SnO_2, Cu-SnO_2, Zn-SnO_2, Cd-SnO_2, Pt-SnO_2, TiO_2, ZrO_2, ZnO, MgO, CaO, Li_2O, B_2O_3, CO, CO_2, SiO_2, GeO_2, N_2O, NO, N_2O_3, NO_2, N_2O5, SO_2, SO_3, SeO_2, SeO_3, TeO_2, TeO_3, Cl_2O, ClO_2, Cl_2O_7, Br_2O, BrO_2, I_2O_5 and I_2O_7.

20. The sensor of Claim 18, wherein the electrodes are comprised of a metal.

21. The sensor of Claim 18, wherein the surface comprises an insulating substrate.

22. The sensor of Claim 18, wherein the sol gel comprises poly(ethyleneoxide)-b-poly(propyleneoxide)-b-poly(ethyleneoxide) copolymer.

23. The sensor of Claim 18, wherein the semiconductor sol comprises copolymer poly(ethyleneoxide)-b-poly(propyleneoxide)-b-poly(ethyleneoxide), ethanol and tin chloride.

24. The sensor of Claim 18, wherein the tip is a microcantilever.

25. The sensor of Claim 18, comprising the additional step of fabricating the electrodes by photolithography and electron bean deposition on a surface prior to contacting the tip.

26. A method of detecting an ambient chemical comprising exposing a sensor to at least one ambient chemical wherein the sensor comprises a sol gel nanodisk fabricated between conducting electrodes.

27. The method of Claim 26, wherein the sol gel nanodisk comprises a tin dioxide selected from the group consisting of SnO_2,Ti-SnO_2, Co-SnO_2, Ni-SnO_2, Cu-SnO_2, Zn-SnO_2, Cd-SnO_2, Pt-SnO_2, TiO_2, ZrO_2, ZnO, MgO, CaO, Li_2O, B_2O_3, CO, CO_2, SiO_2, GeO_2, N_2O, NO, N_2O_3, NO_2, N_2O5, SO_2, SO_3, SeO_2, SeO_3, TeO_2, TeO_3, Cl_2O, ClO_2, Cl_2O_7, Br_2O, BrO_2, I_2O_5 and I_2O_7.

28. The method of Claim 26, wherein the conducting electrodes are comprised of metal.

29. The method of Claim 26, wherein the sensor is fabricated on an insulating substrate.

30. The method of Claim 26, wherein the sol gel nanodisk has a width of about 4μM and a length of about 5μM.

31. The method of Claim 26, wherein the sol gel nanodisk comprises poly(ethyleneoxide)-b-poly(propyleneoxide)-b-poly(ethyleneoxide) copolymer.

32. The method of Claim 26, wherein conductance between the electrodes following exposure of the sensor occurs in less than about 200 seconds.

33. The method of Claim 26, wherein the conductance between the electrodes following exposure of the sensor occurs in less than about 10 seconds.

34. The method of Claim 26, wherein the conductance between the electrodes following exposure of the sensor recovers in less than about 400 seconds.

35. The method of Claim 26, wherein the conductance between the electrodes following exposure of the sensor recovers in less than about 30 seconds.